Method of Test For

DETERMINING THE ASPHALT CONTENT OF ASPHALTIC MIXUTRE BY THE IGNITION METHOD

DOTD DESIGNATION: TR 323-14

Scope

1. This method of test determines the asphalt content of asphalt paving mixtures and pavement samples by removing the asphalt cement by ignition in a furnace. The asphalt content is expressed as percent by mass of moisture free mixtures.
2. Reference Documents
   A. AASHTO T 248 – Reducing Samples of Aggregate to Testing Size
   B. DOTD TR 307 – Bitumen Content of Paving Mixtures
   C. DOTD TR 309 – Mechanical Analysis of Extracted Aggregate
   D. DOTD TR 319 – Determination of the Moisture Content of Asphaltic Concrete (Loose Mix)
   E. AASHTO T308 – Determining the Asphalt Binder Content of Hot Mix Asphalt (HMA) by the Ignition Method
   F. DOTD TR 331 – Asphalt Volumetric Calculations

Apparatus

1. Use AASHTO T308, Section 5, Method A-APPARATUS with the following modifications
   A. Transport Container (bucket) – approximately four-liter (one gallon) can with bail and lid, capable of maintaining a tight seal in order to prevent moisture loss.
   B. Sample Container (Pan) – shall be large enough to hold the transport container, lid, bail, and sampled material spread evenly on the bottom of the container.
   C. Miscellaneous equipment – gloves, goggles, safety equipment, etc.
2. Plant Report – Asphaltic Concrete Plant Report, Form No. 03-22-3085
3. Worksheet – Correction Factor for JMF

Health Precautions

Proper precautions are to be taken whenever hot materials or equipment must be handled. Use container holder or thermal gloves while handling hot containers. Wear eye protection while stirring and weighing heated materials due to possible shattering of particles.

The use of high temperature gloves and eye protection is mandatory. The temperature of the furnace, test specimen, specimen trays, and catch pan after removal from the furnace is extremely high. Therefore, caution must be exercised at all times when handling these items since failure to do so could result in serious injury, severe burns, or fire. The test specimen, specimen trays, and catch pan are to be placed inside a safety cage to cool and are not to be placed near any combustible materials.

Sample

1. Use AASHTO T308, Section 6-SAMPLING with the following modifications
   A. Sampling includes Recycled Asphalt Pavement (RAP) samples
      i. A correction factor of 0.4 is assumed for determining the asphalt content of RAP

ii. If there is doubt concerning the accuracy of asphalt content or the correction factor of RAP, determine the asphalt content of the RAP by a solvent extraction method (DOTD TR 307)

B. Sampling includes properly separated pavement cores
   i. Warm the pavement sample in an oven at approximately 160±5°C (320±9°F)
   ii. Carefully separate the sample in a large, flat pan while periodically returning the pan to the oven to facilitate separation of the aggregate particles and dry to constant mass
C. Use Table 1 to determine the minimum mass of test specimen based on nominal maximum aggregate size.

Procedure

1. Use AASHTO T308, Annex A-CORRECTION FACTORS and Section 7, Method A-INTERNAL BALANCE TEST PROCEDURE with the following modifications
   A. Correction factor procedure shall use three calibration specimens at the JMF asphalt content and aggregate gradation

Report

1. Report the following:
   A. Date
   B. Identification of plant, mix type, and JMF
   C. JMF sequence number and sample number
   D. Correction factor for JMF (nearest 0.01%)
   E. Percent Moisture of mixture when needed (nearest 0.1%)
   F. Mass of specimen before ignition (nearest 0.1g)
   G. Percent Asphalt content of mixture (nearest 0.1%)
   H. Mass of aggregate after ignition (nearest 0.1%)

Normal Test Reporting Time

Normal test reporting time is 3 hours for test specimens and 1 day for establishing correction factors.

Table 1 Size of Test Specimen		
Nominal Maximum Aggregate Size, mm	**Nominal Maximum Aggregate Size, U.S. Standard**	**Minimum Mass of Test Specimen, kg**
4.75	No. 4	0.5
9.5	3/8 in.	1
12.5	½ in.	1.5
19.0	¾ in.	2
25.0	1 in.	3
37.5	1 ½ in.	3.5